

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

WHAT IS CLAIMED IS:

1. A balloon catheter, comprising:
 - a) an elongated shaft having an inflation lumen and a guidewire lumen,
and
 - 5 i) a proximal shaft section comprising a tubular member, defining
a proximal portion of the inflation lumen;
 - ii) a distal shaft section at the distal end of the proximal shaft
section, having an outer tubular member defining a distal portion of the inflation
lumen, and an inner tubular member defining the guidewire lumen in fluid
10 communication with a guidewire distal port at the distal end of the inner tubular
member and a guidewire proximal port at the proximal end of the inner tubular
member, the outer tubular member having a bonded section along which the inner
tubular member is bonded thereto and which extends from the proximal end of the
inner tubular member to a location proximal to the distal end of the outer tubular
15 member, and the outer tubular member having a thickened wall portion in the
bonded section thereof, the thickened wall portion having an inner periphery with a
first segment which is bonded to part of an outer surface of the inner tubular member
and which extends around part of the inner periphery of the thickened wall portion,
and a second segment which is not bonded to said inner tubular member and which
20 extends around a remaining part of the inner periphery of the thickened wall portion;
and
 - iii) a reinforcing tube extending within at least a section of the
bonded section of the outer tubular member; and

b) an inflatable balloon on the distal shaft section having a proximal end secured to the outer tubular member, a distal end secured to the inner tubular member, and an interior in fluid communication with the inflation lumen.

2. The balloon catheter of claim 1 wherein the bonded section of the
5 outer tubular member has a distal end spaced proximally apart from the balloon.

3. The balloon catheter of claim 1 wherein the bonded section of the outer tubular member has a length of about 1 to about 10 mm.

4. The balloon catheter of claim 1 wherein the thickened wall portion of the outer tubular member is distal to the guidewire proximal port.

10 5. The balloon catheter of claim 1 wherein the thickened wall portion of the outer tubular member has a length of about 1 to about 10 mm.

6. The balloon catheter of claim 1 wherein the reinforcing tube has a distal end located proximal to the thickened wall portion of the outer tubular member.

7. The balloon catheter of claim 1 wherein the reinforcing tube has a
15 distal end located distal to the proximal end of the thickened wall portion of the outer tubular member.

8. The balloon catheter of claim 1 wherein the reinforcing tube has a proximal section bonded to the proximal shaft section.

9. The balloon catheter of claim 1 wherein the reinforcing tube has a proximal section bonded to an outer surface of the metallic tubular member of the proximal shaft section.

10. The balloon catheter of claim 9 wherein the tubular member of the proximal shaft section is a metallic tubular member having an outer polymeric layer, the outer polymeric layer having a distal end abutting a proximal end of the reinforcing tube.

11. The balloon catheter of claim 10 wherein the outer tubular member has a proximal section bonded to the outer polymeric layer of the proximal shaft section metallic tubular member.

12. The balloon catheter of claim 1 having a side opening extending through a sidewall of the outer tubular member, with a section of the inner tubular member in the side opening and fused to the sidewall of the outer tubular member to form the guidewire proximal port.

13. The balloon catheter of claim 12 wherein about 10% to about 95% of an outer periphery of the inner tubular member is bonded to the inner periphery of the outer tubular member thickened wall portion to form the first segment of the inner periphery of the thickened wall portion.

14. The balloon catheter of claim 1 wherein the second segment of the inner periphery of the outer tubular member thickened wall portion is in contact with an outer surface of the reinforcing tube.

15. The balloon catheter of claim 1 wherein the outer tubular member comprises a first section formed of a first polymeric material, and a second section distal to and bonded to the first section and formed of a second polymeric material different from the first polymeric material.

5 16. The balloon catheter of claim 15 wherein the first section of the outer tubular member comprises the thickened wall portion and portions on either end of the thickened wall portion having a smaller wall thickness than the thickened wall portion.

17. The balloon catheter of claim 15 wherein the thickened wall portion of
10 the outer tubular member has a distal end proximal to the second section of the outer tubular member.

18. The balloon catheter of claim 15 wherein the bonded section of the outer tubular member has a distal end proximal to the second section of the outer tubular member.

15 19. The balloon catheter of claim 15 wherein the first section of the outer tubular member is formed of nylon and the second section of the outer tubular member is formed of polyether block amide.

20. The balloon catheter of claim 1 wherein the reinforcing tube is formed
20 of a polymeric material selected from the group consisting of polyetheretherketone, polyimide, and polytetrafluoroethylene.

21. A rapid exchange type balloon catheter, comprising:
- a) an elongated shaft having an inflation lumen and a guidewire lumen,
- and
- i) a proximal shaft section comprising a metallic tubular member,
- 5 defining a proximal portion of the inflation lumen;
- ii) a distal shaft section at the distal end of the proximal shaft section, having an outer tubular member defining a distal portion of the inflation lumen, and an inner tubular member defining the guidewire lumen in fluid communication with a guidewire distal port at the distal end of the inner tubular
- 10 member and a guidewire proximal port at the proximal end of the inner tubular member, the outer tubular member having a fused section along which the inner tubular member is fused thereto and which extends from the proximal end of the inner tubular member to a location proximal to the distal end of the outer tubular member, and the outer tubular member having a thickened wall portion in the fused
- 15 section thereof, the thickened wall portion having an inner periphery with a first segment which is fused to part of an outer surface of the inner tubular member and which extends around part of the inner periphery of the thickened wall portion, and a second segment which is not bonded to said inner tubular member and which extends around a remaining part of the inner periphery of the thickened wall portion;
- 20 and
- iii) a reinforcing tube extending within at least a section of the outer tubular member thickened wall portion; and

b) an inflatable balloon on the distal section having a proximal end secured to the outer tubular member, a distal end secured to the inner tubular member, and an interior in fluid communication with the inflation lumen.

22. The balloon catheter of claim 21 wherein the thickened wall portion of
5 the outer tubular member is distal to the guidewire proximal port.

23. The balloon catheter of claim 21 wherein the thickened wall portion of the outer tubular member has a length of about 1 to about 10 mm.

24. The balloon catheter of claim 21 wherein the reinforcing tube has a proximal section bonded to the proximal shaft section.

10 25. The balloon catheter of claim 21 wherein the reinforcing tube has a proximal section bonded to an outer surface of the metallic tubular member of the proximal shaft section.

26. The balloon catheter of claim 25 wherein the metallic tubular member of the proximal shaft section has an outer polymeric layer with a distal end abutting a
15 proximal end of the reinforcing tube.

27. The balloon catheter of claim 26 wherein the outer tubular member has a proximal section bonded to the outer polymeric layer of the proximal shaft section metallic tubular member.

28. The balloon catheter of claim 21 having a side opening extending
20 through a sidewall of the outer tubular member, with a section of the inner tubular

member in the side opening and fused to the sidewall of the outer tubular member to form the guidewire proximal port.

29. The balloon catheter of claim 21 wherein about 10% to about 95% of an outer surface of the inner tubular member is bonded to the inner periphery of the outer tubular member thickened wall portion to form the first segment of the inner periphery of the thickened wall portion.

30. The balloon catheter of claim 21 wherein the outer tubular member comprises a first section formed of a first polymeric material, and a second section distal to and bonded to the first section and formed of a second polymeric material different from the first polymeric material.

31. The balloon catheter of claim 30 wherein the first section of the outer tubular member comprises the thickened wall portion and portions on either end of the thickened wall portion having a smaller wall thickness than the thickened wall portion.